TREND STUDY 1-15-96

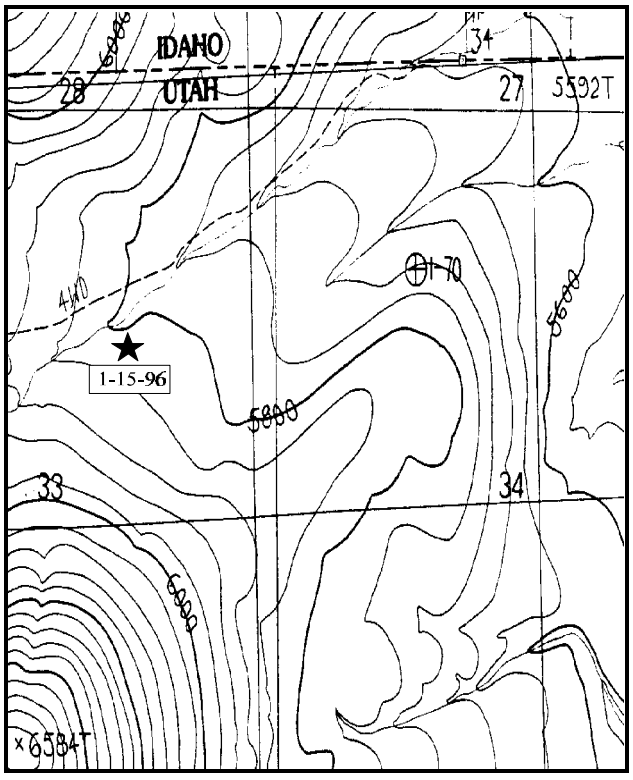
Study site name: Cedar Hills . Range type: Juniper-pinyon .

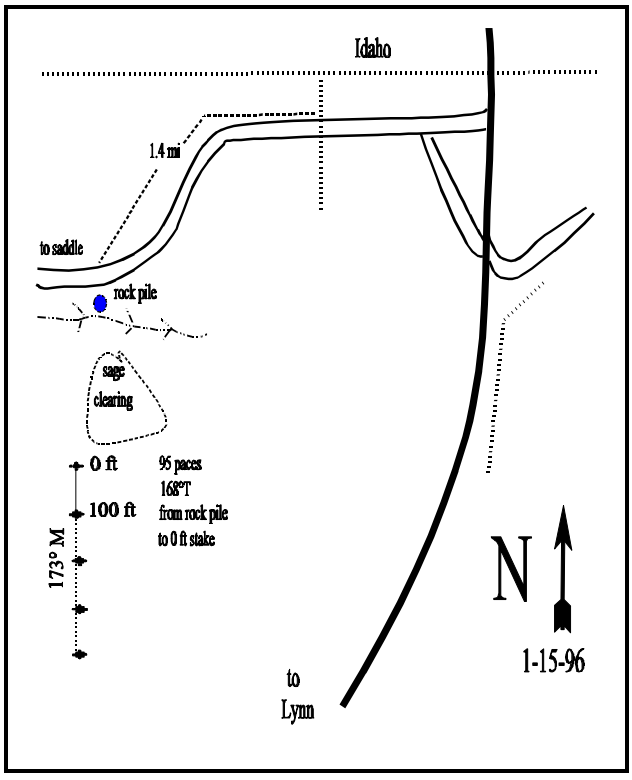
Compass bearing: frequency baseline 173 degrees magnetic.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) Line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From the town of Lynn, drive north to the Utah-Idaho border to a cattleguard. From the cattleguard at the border, follow a faint road up along a fence (on south side) for 0.55 miles to a gate. Go through the next seeded pasture 0.65 miles to where the road turns away from the fence. Continue 0.75 miles to a small rock pile on the south side of the road. Cross the drainage walking about 95 paces southeast to the 0-foot stake off the baseline in the trees. The 0-foot baseline stake is labeled with a browse tag #49.





Map Name: Buckhorn, Utah-Idaho Diagrammatic Sketch

Township 15N Range 16W , Section 33 , UTM: 2-77-580E 46-51-640N

DISCUSSION

Trend Study No. 1-15

A range trend study was established in the Cedar Hills area in 1990, to provide baseline data for a proposed habitat improvement project. The site is on a deer wintering area on the Utah-Idaho border. The area is managed by the BLM and is allotted for spring and fall cattle use as part of the Junction Creek allotment. The study site receives limited use as there are more attractive seeded areas in the unit. There is light deer use due to the limited forage.

The study site is on a 3-5% north-facing slope with an elevation of 5,800 feet. Originally, the site had a significant component of big sagebrush, but juniper and pinyon trees now dominate. The site has a higher potential for successful treatment than the shallow soils of east-facing juniper and black sagebrush slopes to the south.

The soil is a fine-textured clay loam of moderate depth. There is abundant litter under the trees, but in the interspaces there are bare locations and areas of concentrated pavement. Pavement comprises 9% of the ground cover, while bare soil is exposed on 9% of the surface. There is some evidence of significant sheet erosion.

The mountain big sagebrush on the site tend to be only lightly hedged, but have reduced vigor due to competition from the pinyon-juniper overstory. In 1990, the sagebrush population was mostly decadent and had poor vigor. Sagebrush canopy cover was estimated at 5% in 1990 and down to 1% by 1996. Population density was estimated at 2,232 plants/acre in 1990, declining to 1,160 in 1996. Percent decadency was extremely high in 1990 when 86% of the population was classified as decadent. Fifty-seven percent of the sagebrush displayed poor vigor and 66% of the decadent shrubs were considered dying. By 1996, a small portion of these decadent plants recovered but most died. Dead shrubs, first inventoried in 1996, numbered more than those alive (1,860 plants/acre). Percent decadency is currently 44% with poor vigor expressed in 22% of the population. Wildlife use of these shrubs is light.

Singleleaf pinyon and Utah juniper dominate the site. Point-centered quarter data, taken in 1990, estimated a density of 318 pinyon/acre, 70% were seedling trees. A density of 407 juniper/acre was also determined, only 15% were seedling and young trees. Data from a larger sample taken in 1996, estimate a density of 80 single leaf pinyon and 459 Utah juniper trees/acre. Average diameter of pinyon was 5 inches while that of juniper was 4 inches. Ten percent of the pinyon and 40% of the juniper trees have diameters of 3 inches or less. Overhead canopy cover of pinyon and juniper was estimated, using line intercept, at 35% which is beyond where it suppresses understory species.

The healthy but limited perennial grasses and fair diversity of forbs indicate a good site potential. Four native perennial grasses combine to produce 5.5% cover, or just 42% of the herbaceous understory cover. The most common species is Sandberg bluegrass which provides 77% of the grass cover. Thickspike wheatgrass and bluebunch wheatgrass are also fairly abundant. Forbs are very diverse and provide nearly 8% total cover or 58% of the herbaceous cover. Common species include several milkvetch species, stemless goldenweed, thickleaf penstemon and hoods phlox.

1990 APPARENT TREND ASSESSMENT

Sagebrush is declining on this range site. There are few young shrubs, poor vigor and a high percentage of decadent plants. Production of desirable forage is lessened due to factors related to the increasing overstory of pinyon and

juniper trees. Without treatment, soil and vegetative trends will continue to decline.

1996 TREND ASSESSMENT

Soil conditions have improved since 1990 due to a decline in percent bare ground. However, litter cover declined from 55% to 41% and erosion is still occurring in the interspaces. Soil trend is considered up slightly. Trend for mountain big sagebrush is in an overall state of decline but shows some improvements since 1990. Density has declined 48% since the last reading due to a reduction in decadent plants. This has improved the decadency ratio and overall vigor, but reproduction is limited. Without some sort of treatment, all of the sagebrush will eventually die out from competition with the overstory of P-J trees and prolonged drought. Trend is considered down. Trend for the herbaceous understory is up due to increased sum of nested frequency of grasses and forbs.

TREND ASSESSMENT
soil - up slightly
browse - down
herbaceous understory - up

HERBACEOUS TRENDS --
Herd unit 01 , Study no: 15

Type	Species	Nested Frequency '90	Nested Frequency '96	Quadrat Frequency '90	Quadrat Frequency '96	Average Cover % '96
G	Agropyron dasystachyum	76	60	36	21	.76
G	Agropyron spicatum	37	*71	15	25	.48
G	Poa secunda	256	269	90	94	4.23
G	Sitanion hystrix	-	2	-	1	.01
Total for Grasses		369	402	141	141	5.49
F	Agoseris glauca	-	2	-	1	.00
F	Antennaria spp.	1	*10	1	6	.08
F	Arabis spp.	3	*19	2	8	.04
F	Astragalus beckwithii	-	*116	-	54	2.27
F	Astragalus convallarius	-	3	-	1	.00
F	Astragalus spp.	6	11	4	6	.08
F	Astragalus utahensis	3	*21	1	11	.13
F	Castilleja chromosa	-	4	-	2	.01
F	Caulanthus crassicaulis	-	-	-	-	.00
F	Chaenactis douglasii	10	13	4	5	.05
F	Collinsia parviflora (a)	-	87	-	32	.18
F	Crepis acuminata	3	9	2	3	.10
F	Cryptantha spp.	7	5	4	2	.04
F	Erigeron spp	2	6	1	4	.04
F	Erigeron pumilus	-	1	-	1	.00
F	Haplopappus acaulis	9	*25	6	12	.38
F	Penstemon spp.	2	-	2	-	-

Type	Species	Nested Frequency '90	'96	Quadrat Frequency '90	'96	Average Cover % '96
F	Penstemon platyphyllus	-	*14	-	6	.43
F	Phlox hoodii	111	*178	52	70	3.77
F	Senecio multilobatus	14	29	8	14	.07
F	Townsendia spp.	-	4	-	2	.01
F	Zigadenus paniculatus	-	-	-	-	.01
Total for Forbs		171	557	87	240	7.73

* Indicates significant difference at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 01 , Study no: 15

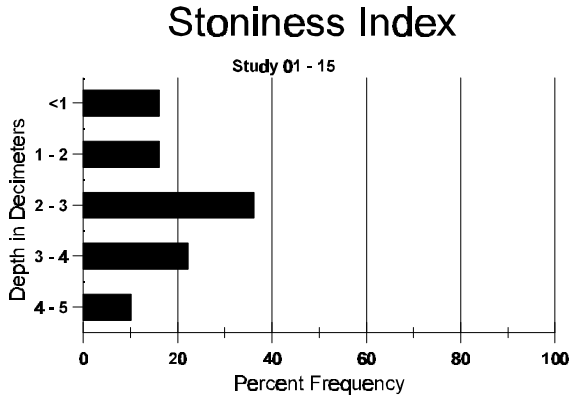
Type	Species	Strip Frequency '96	Average Cover % '96
B	Artemisia tridentata vaseyana	35	1.05
B	Chrysothamnus nauseosus consimilis	1	.03
B	Chrysothamnus viscidiflorus stenophyllus	7	.04
B	Juniperus osteosperma	34	9.75
B	Opuntia fragilis	1	-
B	Pinus monophylla	9	1.65
B	Symphoricarpos oreophilus	7	.30
Total for Browse		94	12.84

BASIC COVER --
Herd unit 01 , Study no: 15

Cover Type	Nested Frequency '96	Average Cover % '90	'96
Vegetation	331	4.00	26.79
Rock	82	1.50	.71
Pavement	242	11.25	9.01
Litter	388	54.75	40.83
Cryptogams	249	7.75	12.89
Bare Ground	201	20.75	9.32

SOIL ANALYSIS DATA --
Herd Unit 01, Study no: 15

Effective rooting depth (inches)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
12.7	57.4 (13.0)	7.8	30.7	40	29.3	3.0	6.7	390.4	.6



PELLET GROUP FREQUENCY --
Herd unit 01 , Study no: 15

Type	Quadrat Frequency '96
Rabbit	14
Deer	4

BROWSE CHARACTERISTICS --
Herd unit 01 , Study no: 15

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	1	-	-	-	-	-	1	-	-	-	33			1
	96	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	7	-	-	1	-	-	-	-	-	7	1	-	-	266	20	18	8
	96	20	2	-	5	-	-	-	-	-	26	-	-	1	540	15	18	27
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	56	1	-	1	-	-	-	-	-	20	-	-	38	1933			58
	96	22	2	-	2	-	-	-	-	-	14	-	-	12	520			26
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	1860			93

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Total Plants/Acre (excluding Dead & Seedlings)														'84	0	Dec:		0%
														'90	2232			87%
														'96	1160			45%
Chrysothamnus nauseosus consimilis																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Total Plants/Acre (excluding Dead & Seedlings)														'84	0	Dec:		-
														'90	0			-
														'96	20			-
Chrysothamnus viscidiflorus stenophyllus																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	6	-	-	-	-	-	-	-	-	6	-	-	-	200			6
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33	7	8	1
	96	8	-	-	-	-	-	-	-	-	8	-	-	-	160	7	7	8
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	9	-	-	4	-	-	-	-	-	7	-	-	6	433			13
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Total Plants/Acre (excluding Dead & Seedlings)														'84	0	Dec:		0%
														'90	666			65%
														'96	200			0%
Juniperus osteosperma																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	8	-	-	-	-	-	-	-	-	8	-	-	-	160			8
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	13	-	-	-	-	-	-	-	-	12	-	1	-	433	108	61	13
	96	25	-	-	-	-	-	1	10	-	36	-	-	-	720	-	-	36
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
Total Plants/Acre (excluding Dead & Seedlings)														'84	0	Dec:		0%
														'90	499			7%
														'96	900			2%
Opuntia fragilis																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20	5	9	1
Total Plants/Acre (excluding Dead & Seedlings)														'84	0	Dec:		-
														'90	0			-
														'96	20			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pinus monophylla																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	3	-	-	2	-	-	-	-	-	4	-	1	-	166			5
	96	8	-	-	1	-	-	-	-	-	9	-	-	-	180			9
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	66	157	97	2
	96	3	-	-	-	-	-	-	1	-	4	-	-	-	80	-	-	4
Total Plants/Acre (excluding Dead & Seedlings)													'84		0	Dec:		-
													'90		66			-
													'96		180			-
Symphoricarpos oreophilus																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	5	-	-	1	-	-	-	-	-	6	-	-	-	120			6
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33	6	9	1
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40	11	17	2
Total Plants/Acre (excluding Dead & Seedlings)													'84		0	Dec:		-
													'90		33			-
													'96		160			-